**QUESTION FROM PREVIOUS EXAMS, PRE NEW SYLLABUS! USE FOR REFERENCE ONLY**

**1. Draw a diagram to show the structure of a cell membrane** *5 marks*

* phospholipids labelled with hydrophillic (heads) and hydrophobic (tails)
* phospholipid bilayer clearly shown and labelled
* proteins shown in the bilayer and labelled
* transmembrane and peripheral/extrinsic proteins shown and labelled
* glycoproteins shown and labelled
* cholesterol shown and labelled
* glycolipids shown and labelled
* thickness shown as 10 nm/ + or - 2 nm

**2. Explain how the structure and properties of phospholipids help to maintain the structure of cell membranes.** *9 marks*

*phospholipid structure*

* hydrophobic tail/hydrophilic head
* head made from glycerol and phosphate
* tail made from two fatty acids
* saturated/ unsaturated fatty acid (in tail)

*arrangement in membrane*

* phospholipids form a bilayer
* heads face outside the membrane/ tails face inside the membrane/ hydrophic interior/ hydrophilic exterior of membrane

*A suitable annotated diagram may incorporate all or many of the above points. Award 5 marks maximum for a suitable diagram that is labelled correctly.*

* phospholipids held together by hydrophobic interactions
* phospholipid layers are stabilized by interaction of hydrophilic heads and surrounding water
* phospholipids allow for membrane fluidity/ flexibility
* fluidity/ flexibility helps membranes to be (functionally) stable
* phospholipids with short fatty acids/ unsaturated fatty acids are more fluid
* fluidity is important in breaking and remaking membranes (e.g. endocytosis/ exocytosis)
* phospholipids can move about/ move horizontally/ "flip flop" to increase fluidity
* hydrophilic/ hydrophobic layers restrict entry/ exit of substances